



# **USB-ZIGBEE™ Dongle UBEE™**

## **User Manual**

Version: 2.00

Document reference: UM\_UBEE\_200102707\_001\_02\_00

## I WARRANTY

The device supplied to the buyer and/or the recipient is guaranteed by CLEODE against any malfunctions originating from a design and/or manufacturing flaw, for a period of twelve (12) months following delivery. The buyer and/or recipient is (are) responsible for proving the existence of the said defects or flaws. This warranty is applicable in accordance with articles 1641 to 1648 of the French Civil Code and in compliance with the French statutory warranty. The warranty covers the replacement free of charge of devices and parts affected by a design and/or manufacturing flaw excluding conspicuous defects in the device that are covered by the buyer and/or the recipient.

In order to invoke the warranty, the buyer must immediately send written notice to CLEODE of the flaws that it attributes to the device. It must enable CLEODE to have access to the device to observe these defects and repair them. The warranty provided by CLEODE is strictly limited to the equipment provided and shall only have for effect the replacement or repair, at CLEODE's expense, on its own premises, of all devices or parts that are not functioning as a result of defects or flaws. CLEODE reserves the right to modify the devices in order to comply with the warranty.

The warranty does not apply to replacement or repairs that may result from normal wear and tear of devices, systems or products, damage or accidents resulting from negligence, failure to supervise or maintain, or incorrect use of the devices, systems and/or products.

The maintenance service is provided by CLEODE with all reasonable care possible and in compliance with the current state of the arts.

The exchange of parts or repairs performed under the warranty cannot result in extending the length of the warranty. In no event can the unavailability of the device due to servicing give rise to compensation for any reason whatsoever. The seller is released from all obligations relating to the warranty if the product or device has been modified without prior written consent, or if original parts have been replaced by parts which it has not manufactured without prior consent. If unforeseen damage is caused by the device, it is expressly agreed that the seller can only be liable for the reimbursement of monies received for the purchase of the device if it has been destroyed. Under no circumstances can the seller be held liable for indirect or contingent damage. The seller is released from any liability and the buyer waives any rights against it if an accident or direct or indirect damage is caused to the buyer following a defect, incorrect usage, incorrect maintenance or normal wear of the device sold.

## II TABLE OF CONTENT

I.	Introduction .....	6
I.1	USB ZigBee™ dongle presentation.....	6
I.2	Copyright .....	6
II.	Description of UBEE kit.....	7
II.1	Content .....	7
II.2	Description of the UBEE™ dongle.....	7
III.	Software installation .....	9
III.1	PRELIMINARY .....	9
III.2	Driver installation .....	9
III.2.1	UBEE™ Window XP Driver .....	9
III.2.2	UBEE™ Linux 2.6 Driver.....	11
IV.	Software interface.....	12
IV.1	Texas Instrument Api.....	12
IV.2	ZigBee description .....	12
IV.2.1	Basic Cluster .....	12
IV.2.2	Identify Server Cluster .....	12
IV.2.3	Identify Client Cluster .....	13
V.	UBEE user guide .....	14
V.1	Powering .....	14
V.2	Association permit .....	14
V.3	Reset the network parameters .....	14
VI.	Repair and maintenance.....	15

## LIST OF FIGURES

---

Figure 1 : UBEE Description .....	7
Figure 2 : Driver update .....	9
Figure 3 : UBEE in Windows's device manager.....	10

## TABLE OF REVISIONS

---

Version	Author(s)	Description de la version	Date
0.1	CLEODE	Initial version	11/08/2009
1.0	CLEODE	Validated document	11/08/2009
1.1	CLEODE	Add Identify Client cluster	11/08/2010
2.0	CLEODE	Validated document	16/08/2010

## I. INTRODUCTION

---

### ***1.1 USB ZIGBEE™ DONGLE PRESENTATION***

The USB stick called UBEE™ allows generating a wireless mesh home networking based on the ZigBee™ protocol and the IEEE 802.15.4 standard.

UBEE™ is used as a ZigBee™ coordinator in home network.

With additional parts as sensors (temperature), actuators, etc., it is possible to setup a home area network that controls the lights, security system, fire system, and the heating and air conditioning.

### ***1.2 COPYRIGHT***

The CLEODE trademark and the CLEODE logo are properties of CLEODE SA, France. This document also refers to trademarks and other product names that are registered trademarks of their respective owners.

Copyright © 2009 CLEODE SA. All rights reserved.

## II. DESCRIPTION OF UBEE KIT

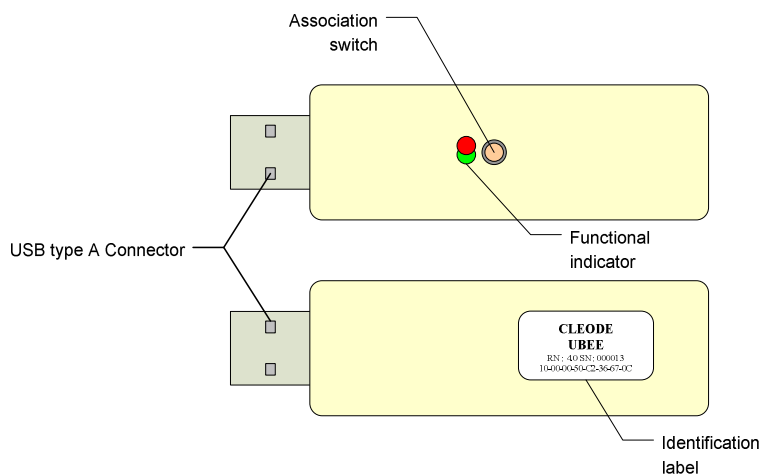
### II.1 CONTENT

The UBEE™ package includes:

- 1 UBEE™ dongle
- 1 CD-ROM including necessary software and documentation resources (BSP) :
  - 1 Windows XP Driver for UBEE™,
  - 1 User manual
  - 1 Description document of Texas Instrument API

### II.2 DESCRIPTION OF THE UBEE™ DONGLE

The UBEE™ dongle was developed by CLEODE and allows managing a ZigBee™ home networking from a PC.



**Figure 1 : UBEE Description**

Figure 1 shows UBEE interfaces:

- The USB connector: used to power supply the dongle and provide the serial link between the USB host and UBEE.
- The association switch : used to allow devices association in the ZigBee network<sup>1</sup>

<sup>1</sup> Function non-implemented in this revision

- The functional indicator: signal to user if the UBEE works fine (green), the network is up (red) and if the devices are allowed to join the network (red blink).
- Identification label: shows the version number, the serial number and the IEEE address of the dongle.



## III. SOFTWARE INSTALLATION

### III.1 PRELIMINARY

The required material is a PC with a Windows XP OS.

### III.2 DRIVER INSTALLATION

#### III.2.1 UBEE™ Window XP Driver

The UBEE driver is provided on the Web Site ([www.cleode.com](http://www.cleode.com)) at the page Download – Drivers:

**drivers\_ubee\_2\_06.zip**

When you plug the UBEE in the PC, the Windows's device manager doesn't recognize the USB device, you must update the driver by selected the driver directory.

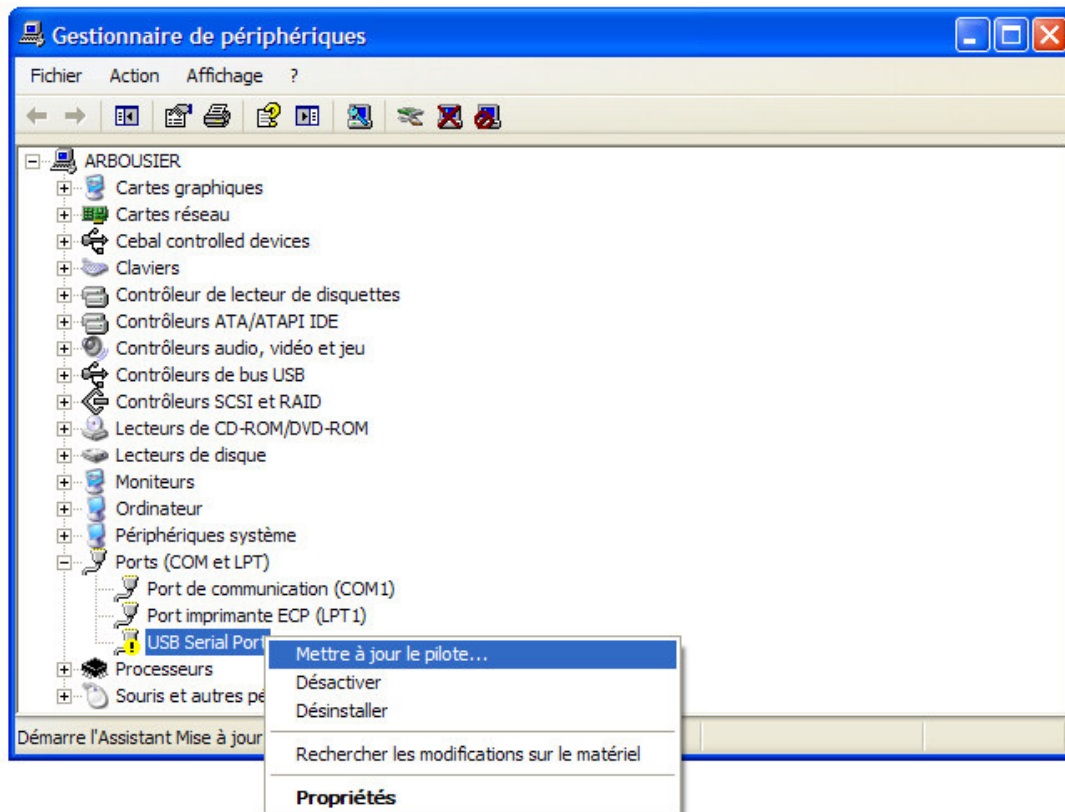
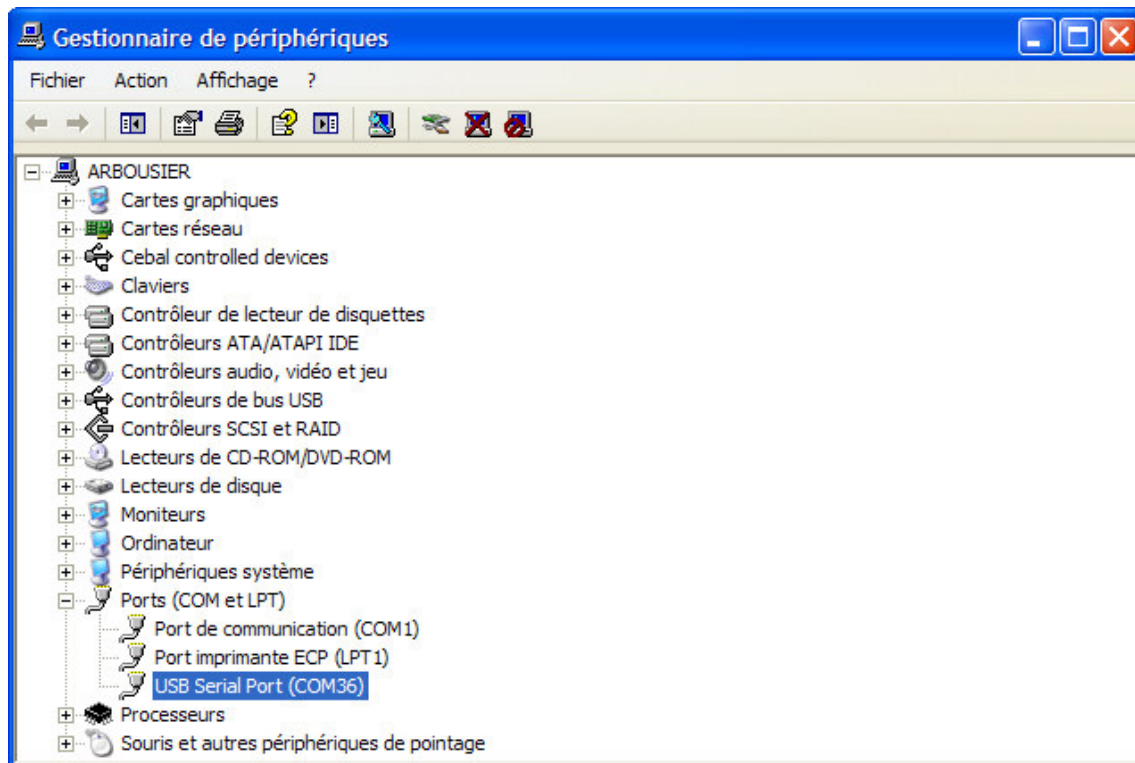


Figure 2 : Driver update

You can verify the right installation by display the UBEE in the Windows's device manager.



**Figure 3 : UBEE in Windows's device manager**

The driver created a virtual COM (here COM36) port allowing easy access to the serial port of the embedded.

### III.2.2 UBEE™ Linux 2.6 Driver

In most cases, the USB driver necessary for the UBEE™ dongle is included in the Linux 2.6 kernel.

The Linux codes are located under the directory: **linux-2.6\drivers\usb\serial** and includes two main files:

- ftdi\_sio.c
- ftdi\_sio.h

#### III.2.2.1 Driver Installation in the Linux kernel

Before plugging the UBEE™ dongle, setup the Linux kernel as follows:

→ Linux kernel modifications:

1. Run « ppc menuconfig »
2. Insert the FTDI driver (loadable module or precompiled) as follow:
  - o Device Drivers --->
    - └ USB Support --->
      - └ USB Serial Converter support --->
        - └ USB FTDI Single Port Serial Driver
3. check the Hotplug option:
  - o Device Drivers --->
    - └ Generic Driver Options --->
      - └ Hotplug firmware loading support

→ compile the kernel

#### III.2.2.2 User space Installation:

→ create a file « ttyUSBx » (x corresponds to the ttyUSB number port you have chosen, for example : 0):

- o `mknod /dev/ttyUSBx c 188 0`

→ be careful to have the peripheral manager 'udev' at user level in order to have the 'hot plug' capability. Source codes are downloadable following:

<http://www.us.kernel.org/pub/linux/utils/kernel/hotplug/>

→ Insert the UBEE™ dongle in the USB port.

→ Write the command: **dmesg**

Following answer is displayed:

**usb 1-1: FTDI USB Serial Device converter now attached to ttyUSB0**

## IV. SOFTWARE INTERFACE

### IV.1 TEXAS INSTRUMENT API

Texas Instrument API is programmed in the UBEE. This API provides a list of commands and messages which can be used to develop your own ZigBee software with UBEE. This API is described in the *Z-Stack Monitor and Test API.pdf* document. This document is provided on the CD-ROM.

### IV.2 ZIGBEE DESCRIPTION

UBEE is fully compliant with the ZigBee Pro 2007 specification. It is in conformance with the Home Automation profile.

UBEE is a *Configuration Tool* device. Then, it supports these clusters:

N°	Cluster	Description
0x0000	Basic Cluster	Attributes for determining basic information.
0x0003	Identify	Attributes and commands for putting a device into Identification mode (e.g. flashing a light)

#### IV.2.1 Basic Cluster

Attributes and commands for determining basic information about a device, setting user device information such as location, enabling a device and resetting it to factory defaults. This following list show the attributes implemented by UBEE:

Number	Attribute	Description
0x0000	ZCLVersion	Version number of the ZigBee Cluster Library
0x0001	ApplicationVersion	Version number of the application software
0x0002	StackVersion	Version number of the implementation of the ZigBee stack
0x0003	HWVersion	Version number of the hardware of the device
0x0004	ManufacturerName	Name of the manufacturer (CLEODE)
0x0005	ModelIdentifier	Model identification (UBEE)
0x0006	DateCode	Date of firmware
0x0007	PowerSource	Source of power available to the device (0x01 : Mains)

#### IV.2.2 Identify Server Cluster

This cluster is used to put a device into an Identification mode (e.g. flashing a light), that indicates to an observer. e.g. an installer - which of several devices it is, also to request any device that is identifying itself to respond to the initiator.

The indicator of UBEE is flashing during the Identify Time.

Identify cluster in UBEE supports this attribute:

N°	Attribut	Description
0x0000	Identify Time	remaining length of time, in seconds, that UBEE will continue to identify itself

### IV.2.3 Identify Client Cluster

This cluster is used to allow to identify all devices associated from the Ubee (all devices flash).

A long press on the switch on the Ubee allows the flashing of all devices (for 60 seconds). A second long press stops the flashing of all devices.

## V. UBEE USER GUIDE

---

### *V.1 POWERING*

The user powers on UBEE by plug it on the USB host (PC or other).

At power, the functional indicator show a green light.

When the UBEE bring up the network, the functional indicator shows a green + red light.

### *V.2 ASSOCIATION PERMIT*

After UBEE bring up the network, it doesn't allow the devices to join the network.

To allow devices join the network, the user has to push the switch on the UBEE<sup>2</sup>.

When the user pushes the switch, the indicator is flashing in red to signal that UBEE permits join. The association permit stop after 15 minutes and the indicator stop to flash.

### *V.3 RESET THE NETWORK PARAMETERS*

The UBEE saved all its network parameters in flash memory (associated devices, PANID, etc.).

To reset these parameters, the user has to proceed like this:

1. Push on the switch and maintain it
2. Plug the UBEE dongle with maintain the switch until the indicator shows a red light
3. Release the switch when the indicator shows a red light

---

<sup>2</sup> Function non-implemented in this revision

## VI. REPAIR AND MAINTENANCE

---

Defective equipments shall be first reported to the CLEODE support team in order to be assigned an RMA number. Be prepared to state your name, company and the serial number of the defective item to the support personnel.

The item shall then be returned to CLEODE with the following documents:

- The RMA number
- A copy of the delivery slip
- A detailed description of the default and the test context

The maintenance period is typically four (4) weeks starting from the date of reception of the equipment at the CLEODE headquarters.

Remark : A FAQ (Frequently Asked Questions) is available on the [www.cleode.com](http://www.cleode.com) web site.



CLEODE S.A.  
Technical Support Division

8, rue Bourseul  
22300 Lannion  
Phone : +33 (0) 2 96 48 68 18  
Fax : +33 (0) 2 96 48 19 11

E-mail : [support@cleode.com](mailto:support@cleode.com)  
Web : <http://www.cleode.com>